

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 1. (Currently Amended) A method for providing printer recognition and
2 management of a print job entity, comprising:
3 establishing a repository of attributes and status information associated with each
4 print job that passes through a printer system; ~~and~~
5 providing an interface to a plurality of components to allow access to the attributes
6 and status information in the repository by the plurality of components; and
7 establishing a job monitor for managing the repository of attributes and status
8 information associated with each print job, for responding to a call by a printer component
9 and for managing interactions between printer components in order to control the processing
10 of the job.

1 2. (Original) The method of claim 1 wherein the interface comprises at least
2 one of a Web Page channel, a multiplexer to manage the routing of jobs to the print engine
3 and a spooler, a job control function interface, a pipeline interface, an operations panel
4 interface and a pull print interface.

1 3. (Original) The method of claim 1 further comprising providing by the
2 interface an ability for components to process a job according to requirements of the
3 component and reporting job attributes and processing status of the job for common access
4 by other components.

1 4. (Original) The method of claim 1 further comprising providing by the
2 interface access to maintained job variable to the components.

1 5. (Original) The method of claim 1 further comprising providing by the
2 interface to a component access to common variables, the components presenting job
3 attributes or status to the interface.

1 6. (Original) The method of claim 5 wherein the attributes are presented
2 according to requirements dictated by the interface

1 7. (Original) The method of claim 1 wherein the interface provides the
2 ability for components to create job entries, obtain and set job attributes, manipulate the state
3 and status of jobs in the system, and obtain job ordering information pertinent to the calling
4 component.

1 8. (Original) The method of claim 1 wherein the repository provides a global
2 view of jobs within the printer, the global view includes an actively printing job, jobs in the
3 process of being spooled, jobs on the spool queue, and jobs on the pull print queue.

1 9. (Currently Amended) The method of claim 1 wherein the interface
2 accommodates ~~either~~ implementation of port connection managers and pass job information
3 from a port connection manager to the repository.

1 10. (Original) The method of claim 1 wherein the interface cancels jobs.

1 11. (Original) The method of claim 10 wherein a cancelled job comprises a
2 current job.

1 12. (Original) The method of claim 10 wherein a cancelled job comprises a
2 job having a selected attribute.

1 13. (Original) The method of claim 1 further comprising providing logical
2 views to obtain a next job to be processed by a component and to obtain a list of all jobs in
3 the order that they are processed.

1 14. (Currently Amended) The method of claim 1 further comprises ~~establishing a~~
2 ~~job monitor~~ for obtaining a Job ID, performing a query for attributes of a job, updating job
3 attributes, canceling jobs, providing logical views of a job, handling printer events, getting
4 attributes of the printer and setting printer attributes by the job monitor.

1 15. (Original) The method of claim 14 wherein the attributes are updated
2 through the job monitor.

1 16. (Original) The method of claim 14 wherein the job monitor provides the
2 ability for any component to set job attributes.

1 17. (Original) The method of claim 14 wherein the job monitor uses job states
2 to control the flow of jobs.

1 18. (Currently Amended) The method of claim 14 further comprising ~~responding~~
2 ~~by the job monitor to a component call, wherein the job monitor determines~~ determining a
3 next job to process and ~~wherein the component determines~~ determining valid states for a call
4 by the component.

1 19. (Original) The method of claim 18 further comprising maintaining a valid
2 state for a multiplexer.

1 20. (Original) The method of claim 19 wherein the maintaining a valid state
2 for a multiplexer further comprises:
3 placing an incoming job into an unknown state when a job identification is requested;
4 placing the incoming job in the Pull Print queue when the job is stop-flowed at a port
5 connection manager waiting for access to the printer because a print engine is processing
6 another job; and
7 selecting the incoming job and processing the job according to whether the job must
8 be spooled, may spool or must print.

1 21. (Original) The method of claim 20 wherein the incoming job is routed to
2 the print engine or the spooler according to which comes first when the job is a job that may
3 spool.

1 22. (Original) The method of claim 20 wherein the incoming job is placed in
2 a pending spooler when the job is a job that must be spooled.

1 23. (Original) The method of claim 20 further comprising indicating a done
2 state for the multiplexer when the job has been printed.

1 24. (Original) The method of claim 18 further comprising maintaining a valid
2 state for a spooler.

1 25. (Original) The method of claim 24 wherein the maintaining a valid state
2 for a spooler further comprises:

3 receiving a job identification request;

4 entering a not spooled state when the spooler has not yet processed the job;

5 entering a spooling, can despool state when the job is being written to the spool

6 device thereby allowing the job to be selected for despooling at any time;

7 entering a spooling, despooling state when the job is being written to the spool device

8 and is also being read from the spool device;

9 entering a waiting to despool state when the end of the job has been received;

10 entering a despooling state when the job is being read from the spool device and

11 written to the multiplexer; and

12 entering the done state when the job is finished being processed by the spooler.

1 26. (Original) The method of claim 25 wherein a job that is printed directly
2 and not processed by the spooler remains in the not spooled state.

1 27. (Original) The method of claim 18 further comprising maintaining a valid
2 state for an interpreter.

1 28. (Original) The method of claim 27 wherein the maintaining a valid state
2 for a interpreter further comprises:
3 entering a waiting for data stated when job processing by the interpreter has started;
4 entering an interpreting state when the job is being processed by the interpreter; and
5 entering a done state when the job is finished being processed by the interpreter.

1 29. (Original) The method of claim 18 further comprising maintaining a valid
2 state for a print engine.

1 30. (Original) The method of claim 29 wherein the maintaining a valid state
2 for a print engine further comprises:
3 entering a waiting for pages state when job processing by an interpreter has not yet
4 started;
5 entering a waiting for pages state when the job has started;
6 entering the pages queued state when one or more pages for the job have been created
7 by the interpreter and written to the page buffer;
8 entering the pages printing state when one or more pages for the job have been
9 delivered to the output tray; and
10 entering the done state when the last page for the job has been delivered to the output
11 tray.

1 31. (Original) The method of claim 1 further comprising handling incoming
2 jobs with a port connection manager, wherein the port connection manager calls to a
3 multiplexer to process the job.

1 32. (Original) The method of claim 1 further comprising deciding whether to
2 assign a job to the printer, whether to assign a job to a spooler, whether the job must wait for
3 available resources or whether the job cannot be processed.

1 33. (Original) The method of claim 1 further comprising requesting from a
2 job monitor a job identification prior to processing the job by a multiplexer.

1 34. (Original) The method of claim 33 further comprising storing the job
2 identification in a job table and clearing the job identification from the table when an end of
3 job is called by a port connection manager.

1 35. (Original) The method of claim 1 further comprising providing a job
2 monitor to fetch jobs in an order that is dependent upon the calling component.

1 36. (Original) The method of claim 35 further comprising examining by the
2 job monitor process job states and variables to determine the correct response and to return
3 an appropriate job identification for a job.

1 37. (Original) The method of claim 1 further comprising providing an event
2 registration to provide a methodology for a controller to indicate events to a job monitor,
3 wherein the Job Monitor serves as the system focal point for tracking job related events as
4 they occur during the course of an entire print process.

1 38. (Original) The method of claim 37 further comprising defining events for
2 the job monitor.

1 39. (Original) The method of claim 1 further comprising providing a job
2 monitor for addressing job processing complexity by viewing a job on a higher conceptual
3 plane rather than managing a collection of attributes and status variables that is unique for
4 each data channel.

1 40. (Original) The method of claim 1 further comprising providing a job
2 monitor for providing a common method of accessing the variables associated with a job for
3 the components.

1 41. (Currently Amended) An apparatus for providing printer recognition and
2 management of a print job entity, comprising:
3 a repository of attributes and status information associated with each print job that
4 passes through a printer system; ~~and~~
5 an interface to a plurality of components, the interface providing access to the
6 attributes and status information in the repository by the plurality of components; and
7 a job monitor for managing the repository of attributes and status information associated with
8 each print job, for responding to a call by a printer component and for managing interactions
9 between printer components in order to control the processing of the job. .

1 42. (Original) The apparatus of claim 41 wherein the interface comprises at
2 least one of a Web Page channel, a multiplexer to manage the routing of jobs to the print
3 engine and a spooler, a job control function interface, a pipeline interface, an operations
4 panel interface and a pull print interface.

1 43. (Original) The apparatus of claim 41 wherein the interface provides an
2 ability for components to process a job according to requirements of the component and
3 reports job attributes and processing status of the job for common access by other
4 components.

1 44. (Original) The apparatus of claim 41 wherein the interface provides
2 access to maintained job variable to the components.

1 45. (Original) The apparatus of claim 41 wherein the interface provides a
2 component access to common variables, the components presenting job attributes or status to
3 the interface.

1 46. (Original) The apparatus of claim 45 wherein the attributes are presented
2 according to requirements dictated by the interface

1 47. (Original) The apparatus of claim 41 wherein the interface provides the
2 ability for components to create job entries, obtain and set job attributes, manipulate the state
3 and status of jobs in the system, and obtain job ordering information pertinent to the calling
4 component.

1 48. (Original) The apparatus of claim 41 wherein the repository provides a
2 global view of jobs within the printer, the global view includes an actively printing job, jobs
3 in the process of being spooled, jobs on the spool queue, and jobs on the pull print queue.

1 49. (Currently Amended) The apparatus of claim 41 wherein the interface
2 accommodates ~~either~~ implementation of port connection managers and pass job information
3 from a port connection manager to the repository.

1 50. (Original) The apparatus of claim 41 wherein the interface cancels jobs.

1 51. (Original) The apparatus of claim 50 wherein a cancelled job comprises a
2 current job.

1 52. (Original) The apparatus of claim 50 wherein a cancelled job comprises a
2 job having a selected attribute.

1 53. (Original) The apparatus of claim 41 wherein the a repository and
2 interface are provided by a job monitor, the job monitor further providing logical views to
3 obtain a next job to be processed by a component and to obtain a list of all jobs in the order
4 that they are processed.

1 54. (Original) The apparatus of claim 41 wherein the job monitor obtains a
2 Job identification, performs a query for attributes of a job, updates job attributes, cancels
3 jobs, provides logical views of a job, handles printer events, gets attributes of the printer and
4 sets printer attributes.

1 55. (Original) The apparatus of claim 54 wherein the attributes are updated
2 through the job monitor.

1 56. (Original) The apparatus of claim 54 wherein the job monitor provides the
2 ability for any component to set job attributes.

1 57. (Original) The apparatus of claim 54 wherein the job monitor uses job
2 states to control the flow of jobs.

1 58. (Currently Amended) The apparatus of claim 54 wherein the job monitor
2 ~~responds to a component call~~, determines a next job to process, the component determining
3 valid states for a call.

1 59. (Original) The apparatus of claim 58 further comprising a multiplexer.

1 60. (Original) The apparatus of claim 59 wherein the valid states for a
2 multiplexer further comprise:

3 an unknown stated for when a job identification is requested; and

4 a pull print queue state for the job when the job is stop-flowed at a port connection
5 manager waiting for access to the printer because a print engine is processing another job;

6 wherein the multiplexer receives the job and selects to place the job in a job must be
7 spooled state, a may spool state or must print state.

1 61. (Original) The apparatus of claim 60 wherein the multiplexer routes the
2 incoming job to the print engine or the spooler according to which becomes available first
3 when the job is a job that may spool.

1 62. (Original) The apparatus of claim 60 wherein the multiplexer places an
2 incoming job in a pending spooler when the job is a job that must be spooled.

1 63. (Original) The apparatus of claim 60 wherein the multiplexer enters a
2 done state for the multiplexer when the job has been printed.

1 64. (Original) The apparatus of claim 58 further comprising a spooler.

1 65. (Original) The apparatus of claim 64 wherein the spooler receiving a job
2 identification request, enters a not spooled state when the spooler has not yet processed the
3 job, enters a spooling, can despool state when the job is being written to the spool device
4 thereby allowing the job to be selected for despooling at any time, enters a spooling,
5 despooling state when the job is being written to the spool device and is also being read from
6 the spool device, enters a waiting to despool state when the end of the job has been received,
7 enters a despooling state when the job is being read from the spool device and written to the
8 multiplexer and enters the done state when the job is finished being processed by the spooler.

1 66. (Original) The apparatus of claim 65 wherein a job that is printed directly
2 and not processed by the spooler remains in the not spooled state.

1 67. (Original) The apparatus of claim 58 further comprising an interpreter.

1 68. (Original) The apparatus of claim 67 wherein the interpreter enters a
2 waiting for data stated when job processing by the interpreter has started, enters an
3 interpreting state when the job is being processed by the interpreter and enters a done state
4 when the job is finished being processed by the interpreter.

1 69. (Original) The apparatus of claim 58 further comprising a print engine.

1 70. (Original) The apparatus of claim 69 wherein the print engine enters a
2 waiting for pages state when job processing by an interpreter has not yet started, enters a
3 waiting for pages state when the job has started, enters the pages queued state when one or
4 more pages for the job have been created by the interpreter and written to the page buffer,
5 enters the pages printing state when one or more pages for the job have been delivered to the
6 output tray and enters the done state when the last page for the job has been delivered to the
7 output tray.

1 71. (Original) The apparatus of claim 41 wherein the a repository and
2 interface are provided by a job monitor, the job monitor further handling incoming jobs with
3 a port connection manager, wherein the port connection manager calls to a multiplexer to
4 process the job.

1 72. (Original) The apparatus of claim 41 wherein the a repository and
2 interface are provided by a job monitor, the job monitor further deciding whether to assign a
3 job to the printer, whether to assign a job to a spooler, whether the job must wait for available
4 resources or whether the job cannot be processed.

1 73. (Original) The apparatus of claim 41 wherein the a repository and
2 interface are provided by a job monitor, the job monitor receiving a request for a job
3 identification prior to processing the job by a multiplexer.

1 74. (Original) The apparatus of claim 73 wherein the job identification is
2 stored in a job table, the job monitor clearing the job identification from the table when an
3 end of job is called by a port connection manager.

1 75. (Original) The apparatus of claim 41 further comprising a job monitor to
2 fetch jobs in an order that is dependent upon the calling component.

1 76. (Original) The apparatus of claim 75 further comprising a job monitor for
2 examining process job states and variables to determine the correct response and to return an
3 appropriate job identification for a job.

1 77. (Original) The apparatus of claim 41 further comprising a job monitor for
2 serving as a focal point for tracking job related events as they occur during the course of an
3 entire print process.

1 78. (Original) The apparatus of claim 77 further comprising events definitions
2 for the job monitor.

1 79. (Original) The apparatus of claim 41 further comprising a job monitor for
2 addressing job processing complexity by viewing a job on a higher conceptual plane rather
3 than managing a collection of attributes and status variables that is unique for each data
4 channel.

1 80. (Original) The apparatus of claim 41 further comprising a job monitor for
2 providing a common method of accessing the variables associated with a job for the
3 components.

1 81. (Currently Amended) An article of manufacture comprising a program
2 storage medium readable by a computer, the medium tangibly embodying one or more
3 programs of instructions executable by the computer to perform a method for providing
4 printer recognition and management of a print job entity, the method comprising:
5 establishing a repository of attributes and status information associated with each
6 print job that passes through a printer system; ~~and~~
7 providing an interface to a plurality of components to allow access to the attributes
8 and status information in the repository by the plurality of components; and
9 establishing a job monitor for managing the repository of attributes and status
10 information associated with each print job, for responding to a call by a printer component
11 and for managing interactions between printer components in order to control the processing
12 of the job.